

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for detecting atrial arrhythmia for ~~a~~ an individual patient, the method comprising the steps of:

- receiving at least one electrical signal indicative of a heart's activity;
- based on the at least one electrical signal, generating a plurality of short-term HRV data sets, ~~a~~ one short-term HRV data set indicating the heart's rate variability within a time period of a given length, ~~and~~ two consecutive short-term HRV data sets having a given time difference;
- performing a frequency analysis of at least some of the generated short-term HRV data sets ~~generated~~;
- 10       - based on a performed frequency analysis ~~performed~~, defining a power level that corresponds to at least one selected frequency component in the corresponding short-term HRV data set, wherein a power level is defined for at least some of the short-term HRV data sets; and
- 15       - based on the power levels so defined, ascertaining ~~estimating~~ an occurrence of ~~an~~ the heart's atrial arrhythmia episodes of the heart.

Claim 2 (currently amended): A method according to claim 1, wherein the ascertaining ~~estimating~~ step includes determining onset and ending moments of ~~an~~ the heart's atrial arrhythmia episodes of the heart.

Claim 3 (currently amended): A method according to claim 1, wherein the performing step includes performing a frequency analysis of all generated short-term HRV data sets ~~generated~~ and the defining step includes defining a power level for all generated short-term HRV data sets ~~generated~~.

Claim 4 (original): A method according to claim 1, wherein the performing step includes

performing a Fourier transformation on at least some of the short-term HRV data sets.

Claim 5 (original): A method according to claim 1, wherein the given length is between 2 and 5 minutes.

Claim 6 (original): A method according to claim 5, wherein the given time difference is substantially shorter than said time period.

Claim 7 (original): A method according to claim 6, wherein the given time difference is between 10 and 30 seconds.

Claim 8 (original): A method according to claim 6, wherein the given time difference remains constant for all short-term HRV data sets generated.

Claim 9 (currently amended): A method according to claim 6, further comprising a step of giving the time difference a new value during ~~in the middle of~~ the generating step.

Claim 10 (currently amended): A method according to claim 9, further comprising a step of replacing some of the generated short-term HRV data sets ~~generated~~ by generating new short-term HRV data sets beginning from a selected time moment, wherein the time difference between two consecutive new short-term HRV data sets has said new value.

Claim 11 (original): A method according to claim 1, wherein the at least one selected frequency component is above 0.3 Hz.

Claim 12 (original): A method according to claim 11, wherein the at least one selected frequency component forms at least one frequency band.

Claim 13 (original): A method according to claim 1, wherein the least one selected

frequency component is below 0.3 Hz.

Claim 14 (currently amended): A method according to claim 1, wherein the ~~first~~ plurality of short-term HRV data sets covers a desired monitoring period.

Claim 15 (original): A method according to claim 14, wherein the desired monitoring period is 24 hours.

Claim 16 (currently amended): A system for detecting atrial arrhythmia for a ~~an individual~~ patient, the system comprising:

- measurement means for obtaining data indicative of a heart's activity;
- ~~first~~ processing means for generating a ~~first~~ plurality of short-term HRV data sets from the data, a ~~one~~ short-term HRV data set indicating the heart's rate variability within a time period of a given length;
- frequency analysis means for performing a frequency analysis of at least some of the short-term HRV data sets, the frequency analysis means being configured to define a power level corresponding to at least one selected frequency component in an individual short-term HRV data set for obtaining a ~~second~~ plurality of power levels; and
- calculation means, responsive to the frequency analysis means, for ascertaining~~estimating~~, based on the ~~second~~ plurality of power levels, an occurrence of an ~~the heart's~~ atrial arrhythmia episodes of the heart.

Claim 17 (currently amended): A system according to claim 16, wherein the calculation means is ~~are~~ configured to determine onset and ending moments of an ~~the heart's~~ atrial arrhythmia episodes of the heart.

Claim 18 (currently amended): A system according to claim 16, wherein the frequency analysis means is ~~are~~ configured to define a power level corresponding to a selected frequency band in an individual short-term HRV data set.

Claim 19 original): A system according to claim 16, further comprising means for displaying the atrial arrhythmia episodes and their durations in time domain.

Claim 20 (new): A method according to claim 1 wherein the given time difference is substantially shorter than said time period.

Claim 21 (new): A method according to claim 20 wherein the given time difference remains constant for all short-term HRV data sets generated.

Claim 22 (new): A method according to claim 20 further comprising a step of giving the time difference a new value during the generating step.

Claim 23 (new): A method according to claim 22 further comprising a step of replacing some of the generated short-term HRV data sets by generating new short-term HRV data sets beginning from a selected time moment, wherein the time difference between two consecutive new short-term HRV data sets has said new value.

Claim 24 (new): A system according to claim 16 where said frequency analysis means performs a Fourier transformation on at least some of the short-term HRV data sets.